

Unveiling the Implications of Trilateral Research Collaborations on Scholarly Communities' Perspectives from India, China, and Bangladesh

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Abstract

Trilateral research collaborations among scholarly communities in India, China, and Bangladesh represent a dynamic approach to knowledge exchange and innovation in today's globalized academic landscape. Trilateral collaborations offer a unique platform for academia to pool resources, expertise, and perspectives, fostering interdisciplinary research and driving innovation across borders. This paper explores the implications and benefits of such collaborations from the perspectives of scholarly communities in these three countries. The technique used in this study is one sample t-test. The findings of the study indicated that knowledge exchange, Cultural exchange, Resource sharing, Global networking, Enhanced Innovation, Publication opportunities, Professional Growth, Improved Research Quality, Promotion of Diversity, Language skill development, and Promotion of Interdisciplinary Research are significant impacts of trilateral research collaboration on scholarly communities from India, China, and Bangladesh.

Keywords: : Collaborative Research, Trilateral Research, One sample t-test.

Introduction:

In recent decades, there has been a noticeable surge in global collaboration within the realm of international research. The importance of international research collaboration is increasingly acknowledged today. Researchers stand to gain substantially from international nursing and multidisciplinary expertise, as it allows for the pooling of knowledge and perspectives to address increasingly multifaceted issues that transcend disciplinary boundaries (Chan, S 2015). Moreover, collaboration enables researchers to amplify the impact of their contributions and maximize outcomes (Chan, S 2015; Chan, J 2017). Collaborative research efforts on a global and inter-regional scale offer a promising solution to address the fragmentation and inadequate investment in research, as highlighted by Chan (2015, 2017). International research collaboration encompasses diverse activities such as the exchange of ideas, data, and insights, networking with peers worldwide, conducting site visits, engaging in joint grant applications, and disseminating research findings. There has been a noticeable uptick in cross-border research partnerships involving individual scholars, institutions, universities, industries, and various academic fields (Chan, 2015). Particularly for universities focused on research, international collaboration holds significant importance. It notably influences the international outlook indicator, which constitutes 2.5% of the ranking methodology employed by the 2016–2017 Times Higher Education World University Ranking. Research-cen-

tric universities demonstrate notably higher levels of international collaboration, expanding at a rate surpassing the global average (Chan, 2017). The impact of international research collaborations on nursing and midwifery knowledge productivity and global innovation is profound. Collaborations in these fields can lead to a surge in multiple-author publications in international journals and increased citations thereof (Chan, S 2015; Chan, J 2017; Rikken, M. 2016). Despite the upward trajectory in international research collaboration, challenges persist. Challenges inherent in international research collaborations encompass surmounting language barriers, tackling community-specific concerns, and navigating the intricate landscape of intellectual property rights. Establishing frameworks to facilitate such collaborations is essential, including formal agreements outlining collaborative endeavors and decision-making protocols. Effective research collaborations hinge on shared objectives, dedicated researchers, forward-thinking leadership, and reciprocal appreciation for each contributor's input. Implementing strategies to nurture international research partnerships becomes imperative for achieving desired outcomes. Projects involving international and cross-disciplinary collaborations often receive increased attention and prioritization in research funding evaluations (Chan, S. 2015). Government and funding agencies play a crucial role in promoting research collaboration, exemplified by initiatives like the Australian

Research Council's commitment to enhancing international collaboration opportunities (Australian Research Council, 2016). International co-authored publications are not the sole indicator of international collaboration; researchers may collaborate without publication. However, measuring international collaboration remains challenging, highlighting the need for more reliable metrics to incentivize researchers to engage in international collaboration (Chan, S. 2015).

Trilateral collaboration involves the establishment of partnerships between industry, academia, and end-users aimed at developing technologies that address market needs. In this model, academic researchers contribute theoretical know-how, technology providers offer product development expertise, and end-users provide insights into actual market needs. Trilateral collaboration can take different forms, such as partnerships between academia, government, and private industry, or between two industrial partners and an academic partner. This collaborative approach guides research teams in the right direction and accelerates the path to technology commercialization. While trilateral collaboration offers clear benefits, it can also introduce complexity in terms of information confidentiality, research agreements, intellectual property, and commercialization activities. Institutions may initially avoid trilateral arrangements due to these complexities, but efficient mechanisms can be developed to manage the process and overcome obstacles, ensuring that all parties' expectations are met. (El-Ferik, & Al-Naser 2021).

Review of Literature:

1. Elena, Veretennik., Elena, Shakina. (2023). The study's goal was to find out how academic research collaborations affect university faculty productivity and influence. It specifically looked at variations in these effects based on the kind of academic collaboration—domestic, international, or internal—and the research field. The results of the study demonstrated the impact of academic traditions in well-known research fields by showing that STEM researchers were more likely to work with domestic co-authors. Researchers from newly developing disciplines in Russia, such as the social sciences and humanities, had greater publication visibility rates when they collaborated with other countries as co-authors. Furthermore, it was shown that institutional collaborations had a positive correlation with the proportion of referenced documents, demonstrating their influence on the exposure and acknowledgment of research.

2. Elizabeth, S., Vieira. (2023). The research study aimed to investigate the relationship between research cooperation (RC) and citation impact, taking into account the degree of development of each cooperating country's research and innovation system (RIS). The results showed that the citation impact of publications with domestic research collaborations (DRC) and single-authored articles increased with the growth of the RIS. No matter how developed the RIS was in the

participating nations, papers with DRC representation always had a greater citation effect than those with a single author. Additionally, the study showed that single-authored papers and those from foreign research collaborations did not necessarily have a greater impact. In particular, when comparing the citation impact of joint publications by scientists from strong innovator nations to that of single-authored papers by scientists from strong innovator nations, there was no statistically significant difference.

3. Chuer, Xu., Qianjin, Zong. (2023). The study's goal was to investigate how international research collaboration affects how research impacts policy, with a special emphasis on how many citations research receives in policy papers. The study's conclusions show that, as indicated by the coefficient (4.323, $p < 0.001$), international research collaboration significantly and favorably affects the policy impact of research. This implies that cross-border collaboration increases the possibility that research findings will be referenced in policy papers. The study's conclusions provide important guidance on how to increase the policy effect of research for investigators, research organizations, and grant payers. The conclusions are also more credible and reliable when propensity score matching analysis and robustness testing using different datasets are used.

4. Emily, et al. (2023). The goal of the study was to find out how team dynamics and collaboration affect the obstacles that diverse research teams face as well as their triumphs. The investigation showed a strong positive correlation between the success of academic publications and the caliber of team interactions. Although not statistically significant, team collaboration and satisfaction with teammates also showed good correlations with the results of scholarly products. In addition to offering further insight into critical components of the collaborative process essential for promoting success in interdisciplinary teams, the qualitative findings corroborated the quantitative results. Beyond academic measurements, the study's qualitative section also revealed other achievements of interdisciplinary teams, such as career growth and acceleration for early-career researchers.

5. YeSeuk, Park., Sang-Won, Lee. (2022). The study's goal was to find out how partnerships affect the creation of novel drugs, with a particular emphasis on the productivity and pace of innovation in this field. The results showed that, in comparison to independent initiatives, collaborative drug development projects were linked to longer clinical development durations; the biggest differences were shown in phases two and three of clinical trials. Specifically, compared to other forms of partnership, clinical development timelines were found to be extended in small business collaborations. These findings imply that the possible influence of collaborative development, which can unintentionally slow down the clinical development process, should be carefully considered when developing methods for novel medication development.

6. M., Asif., et al. (2022). The study addressed a major research void on the scientific system in Pakistan by examining many facets of research cooperation and how it affects computer scientists' performance within the country. It examined more than 15,494 computer science articles having at least one Pakistani author that were SCOPUS-indexed between 1997 and 2017. The results demonstrated the critical significance that teamwork plays in publishing citation counts. The number of citations obtained was highly impacted by international joint efforts and partnerships involving several nations. Additionally, it was shown that joint articles were more likely to receive citations and to be of a higher calibre. The results of this study highlight how crucial collaboration is to raising the calibre and impact of research produced in the Pakistani scientific community.

7. S., McGrath-Champ. et al. (2022). The purpose of the paper was to investigate an instance of research cooperation in which Australian social science academics and an education trade union worked together to study knowledge co-production and how it affected education policy in New South Wales. The ten-year alliance allowed the study to demonstrate that working with researchers is a special tactic used by trade unions to influence policy results, especially when it comes to teacher workload. By showing how successful it is to work with academics to impact policy and member results, the analysis of this partnership adds to the body of knowledge on union strategy. Furthermore, by showing that knowledge co-production may influence outside of academia, the research adds to the growing body of literature on the subject.

8. Seyed, Reza, et al. (2021). The study's goal was to find out how research partnerships with foreign partners alter the impact of African scientists' work. The results of the analysis indicate that international research cooperation had a favorable and significant influence on the research impact of African scientists in a given year, as measured by citations and journal impact factors. It's noteworthy that this positive impact persisted in the years that followed, suggesting the potential for "permanent learning by international collaboration." Nevertheless, the study also noted that the advantages of international collaboration on the effect of research did not imply that scientists who interacted only locally were of a lower calibre.

Objectives of the Study:

1. To evaluate the significant impact of trilateral research collaborations on scholarly communities' perspectives from India, China, and Bangladesh
2. To give appropriate suggestions to increase collaboration among nations.

Hypothesis:

H_0 : There is no significant impact of trilateral research collaborations on scholarly communities' perspectives from India, China, and Bangladesh. (Mean score < 3)

H_1 : There is a significant impact of trilateral research collaborations on scholarly communities' perspectives from India, China, and Bangladesh. (Mean score > 3)

Research Methodology:

Research Design: Descriptive

Data collection: Primary and secondary data

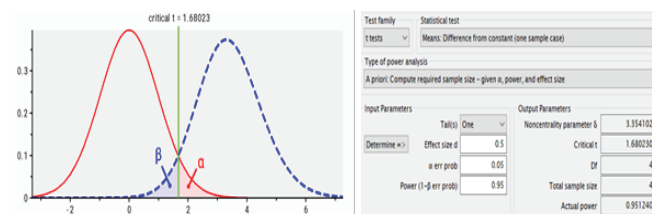
Sampling Technique: non-probability purposive sampling

Sample Size: 120 Research Scholars

Sample Size Justification: According to Faul et al., a minimum sample size of 45 is required to conduct a one-tailed one-sample t-test.

Statistical Technique: Parametric one-sample testing,

Statistical tool: R Studio software



Data Analysis and Interpretation

Table No: 1 Demographic Profile

Variables	Category	Frequency	Percentage
Gender	Male	79	65.83
	Female	41	34.17
Nationality	Indian	60	50.00
	Chinese	40	33.33
	Bangladeshi	20	16.67
Faculty	Science	20	16.67
	Engineering	20	16.67
	Humanities	80	66.66

The data was collected from 120 research scholars, among whom 79 are male (65.83%) and 41 are female (34.17%), indicating a higher male representation within the research community. Regarding nationality, the majority are Indian (60 scholars, 50%), followed by Chinese (40 scholars, 33.33%), and Bangladeshi (20 scholars, 16.67%). This distribution reflects a diverse international composition among the scholars. In terms of faculty representation, 80 scholars (66.66%) belong to the Humanities, while Science and Engineering faculties each account for 20 scholars (16.67%) respectively. The dataset comprises 120 research scholars, among whom 79 are male (65.83%) and 41 are female (34.17%), indicating a higher male representation within the research community. Regarding nationality, the majority are Indian (60 scholars, 50%), followed by Chinese (40 scholars, 33.33%), and Bangladeshi (20 scholars, 16.67%). This distribution reflects a diverse international composition among the scholars. In terms of faculty representation, 80 scholars (66.66%) belong to the Humanities, while Science and Engineering faculties each account for 20 scholars (16.67%) respectively.

Table No: 2 One sample t test

Items	t – statisti cs	P – value	Ha: mean score of impact of Cross-border Research collaboration on various parameters > 3
Knowledge exchange	21.09	0.004	Significant
Cultural exchange	21.78	0.000	Significant
Resource sharing	21.55	0.000	Significant
Global networking	19.00	0.000	Significant
Enhanced Innovation	18.45	0.002	Significant
Publication opportunities	18.11	0.000	Significant
Professional Growth	17.45	0.000	Significant
Improved Research Quality	18.32	0.000	Significant
Promotion of Diversity	19.56	0.000	Significant
Language skill development	20.44	0.000	Significant
Promotion of Interdisciplinary Research	19.32	0.001	Significant

Parametric one sample t – test (one tailed) is applied to examine **impact of Cross-border Research collaboration on various parameters**. It is seen that $p - \text{value} < 0.05$ and $t \text{ statistics} > 1.96$ for knowledge exchange, Cultural exchange, Resource sharing, Global networking, Enhanced Innovation, Publication opportunities, Professional Growth, Improved Research Quality, Promotion of Diversity, Language skill development, and Promotion of Interdisciplinary Research.

Conclusion:

The study's conclusions demonstrate the significant influence that trilateral research cooperation has on Bangladeshi, Chinese, and Indian academic communities. The transformative potential of collaborations of this kind is highlighted by the benefits that have been identified, which include knowledge exchange, cultural exchange, resource sharing, global networking, enhanced innovation, publication opportunities, professional growth, improved research quality, promotion of diversity, language skill development, and promotion of interdisciplinary research. Using the complementing knowledge and resources of each participating nation, trilateral research collaboration is a potent tool for tackling common research concerns. Trilateral projects can stimulate innovation, improve research outputs, and advance academic excellence globally by promoting multidisciplinary cooperation and the sharing of ideas and best practices. Trilateral research partnerships need to be prioritized and supported by funding agencies, academic institutions, and legislators in Bangladesh, China, and India going forward. These nations may open up new avenues for knowledge generation and dissemination by investing in infrastructure and resources, encouraging multidisciplinary research, and creating a collaborative atmosphere.

Suggestions:

- **Foster Institutional Partnerships:** Encourage universities and research institutions in India, China, and Bangladesh to establish formal partnerships aimed at facilitating trilateral research collaborations.
- **Establish Funding Mechanisms:** Create dedicated funding mechanisms and grant opportunities specifically designed to support trilateral research initiatives, incentivizing collaboration among scholars from these countries.
- **Facilitate Knowledge Exchange Platforms:** Develop online platforms and forums that facilitate knowledge exchange and collaboration among researchers from India, China, and Bangladesh, enabling them to share resources, expertise, and best practices.
- **Promote Interdisciplinary Research:** Encourage interdisciplinary research initiatives that bring together scholars from diverse fields and disciplines, fostering innovation and addressing complex societal challenges.
- **Invest in Language and Cultural Training:** Provide language and cultural training programs to scholars involved in trilateral research collaborations, enhancing communication and collaboration effectiveness across borders.
- **Support Research Mobility:** Facilitate research mobility programs and exchanges that enable scholars from India, China, and Bangladesh to collaborate on joint research projects and gain exposure to different research environments and methodologies.

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